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Applicant No.: 10/776,176  
Reply to Office action of November 19, 2007

### **REMARKS/ARGUMENTS**

Claims 1-61 and 80-90 remain cancelled. Claim 79 is hereby cancelled. Claims 62, 64, 68-70, 73, 74 and 78 are currently amended. Claims 63, 65-67, 71, 72 and 75-77 have been previously presented.

#### **Claims objections.**

The Examiner has objected to informalities found in claims 62, 64 and 70. The Applicant has amended claims 62, 64 and 70 in response to the Examiner's objections so that the language objected to by the Examiner is no longer present in these claims.

#### **Claim rejections under 35 USC 112 and drawings.**

The Examiner has rejected claims 78 and 79 for failing to comply with the written description requirement. Claims 79 has been cancelled. Regarding claim 78, the claim has been amended and includes a limitation directed to a wall separating the passageway and the transfer chamber from each other, the wall being substantially horizontally movable so as to allow a variation in a cross-sectional area of the passageway. The Applicant respectfully submits that although no specific mechanism through which the wall is movable have been described in the application as filed, such mechanisms are well within the skills of the person of ordinary skill in the art who would easily, without any imaginative steps, be able to build such a mechanism. Since the disclosure should be read with the eyes of a person skilled in the art, withdrawal of the rejection under 35 USC 112 is respectfully requested.

Also, the Examiner has objected that the subject matter of claims 78 and 79 was not illustrated in the drawings. Claim 79 has been cancelled. Regarding claim 78, since no specific mechanism is considered in the claim for the movable wall, the Applicant

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respectfully submits that the drawings currently on file illustrate all the details of the claimed invention as the wall is clearly shown in the drawings currently on file. Adding more details in a new figure, even if within the scope of the reader skilled in the art, would likely add new matter to the application, in contradiction with the patent act and rules. Accordingly, withdrawal of the objection to the drawings is respectfully requested.

**Claim rejections under 35 USC 102.**

The Examiner has rejected claims 61-66, 68, 71 and 73-77 under 35 USC 102 as being anticipated by US Patent 339,723, hereinafter Winkler. Since claim 61 has been cancelled, the Applicant will proceed with understanding that "61" is a typographical mistake that should instead read "62"

Amended claim 62 reads:

"62. An apparatus for separating a particle stream into a first particle group and a second particle group, said apparatus being connectable to a positive pressure source, said apparatus comprising:

- a dilution treatment chamber defining a passageway, said passageway being substantially upstanding and defining a passageway top end and a substantially opposed passageway bottom end, said passageway top end defining a particle inlet and said passageway bottom end defining a first-particle-group outlet for releasing the first particle group, said passageway being configured and sized to receive the particle stream at said particle inlet such that the particle stream falls toward said first-particle-group outlet;
- a transfer casing located substantially adjacent to said dilution treatment chamber, said transfer casing defining a transfer chamber provided for receiving the second particle group;
- at least one transfer aperture substantially laterally positioned with respect to said passageway, said transfer aperture extending between said transfer chamber and said

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passageway and allowing fluid communication therebetween, **said at least one transfer aperture including an uppermost transfer aperture, said passageway and said transfer chamber being separated from each other by a wall above said uppermost transfer aperture** for preventing said particles from said particle stream falling in said passageway from entering said transfer chamber above said uppermost transfer aperture;

- a distributor located in said passageway between said particle inlet and said transfer aperture, said distributor being provided for substantially breaking down the particle stream and distributing the particle stream substantially horizontally within said passageway, said distributor including a fluid-injection nozzle defining a distributor aperture laterally positioned in said passageway, **said distributor aperture being located above said uppermost transfer aperture**, said fluid-injection nozzle being connectable to the positive pressure source for injecting a jet of the fluid in said passageway through the distributor aperture for distributing the particle stream over a surface area of said passageway; and
- at least one fluid flow aperture provided in said dilution treatment chamber for creating a substantially horizontal fluid flow in said passageway, said at least one fluid flow aperture and said transfer aperture being located below said distributor substantially horizontally aligned relatively to each other and located substantially opposed to each other relatively to said passageway, said fluid flow aperture being connectable to the positive pressure source to create the fluid flow;
- whereby the fluid flow pushes the second particle group out of said passageway through said transfer aperture and into said transfer chamber with the first particle group remaining in said passageway for exiting through said first-particle-group outlet." (emphasis added)

As emphasized hereinabove, amended claim 62 now includes a limitation in which it is specified that an aperture of a nozzle through which a fluid can be injected is located above all the transfer apertures allowing fluid communication between the transfer

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chamber and the passageway. Therefore, there is a section of the claimed apparatus in which an aperture through which fluid is injected faces a wall. Winkler describes an apparatus in which all the fluid flow apertures (d) are aligned so that particles can move from one chamber (c) to another chamber (f). Winkler nowhere discloses a distributor aperture as claimed. In fact, Winkler teaches away from the claimed invention as all the apertures through which a fluid can be injected are used to transfer particles between the two chambers in the apparatus described in this document. Accordingly, the Applicant respectfully submits that amended claim 62 is neither anticipated nor suggested by Winkler and withdrawal of the rejection of claim 62 is respectfully requested.

Furthermore, the Applicant respectfully submits that Winkler does not describe a dilution treatment chamber and a transfer chamber with transfer apertures extending therebetween as claimed in claim 62. To the contrary, Winkler describes a large chamber split in two by a cloth. Nowhere does Winkler mention transfer apertures extending through the cloth. While cloths are porous, the Applicant respectfully submits that the reader skilled in the art, in view of the specification, would not understand a porous cloth as defining two chambers with transfer apertures extending therebetween.

Since claims 63-66, 68 and 71 depend directly or indirectly on claim 62, and since the Applicant believes that claims 62 is in allowable form, the Applicant respectfully requests withdrawal of the rejection of claims 63-66, 68 and 71 for reasons similar to the reasons exposed hereinabove with respect to claim 62.

Amended claim 73 reads:

"73. (Currently amended) A method for separating a particle stream into particle groups, comprising:

- vertically diluting the particle stream by directing the particle stream into a falling condition within a passageway and accelerating the particle stream under the action of gravity;

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- horizontally diluting the particle stream by distributing the particle stream by subjecting the particle stream to high pressure fluid flow creating lateral forces so as to distribute the particle stream over a surface area of said **passageway with said particle stream remaining confined inside said passageway**;
- projecting a particle group away from a remainder of the particle stream **and outside of said passageway** by creating a fluid flow of predetermined magnitude across the particle stream in said falling condition; and
- collecting the particle group and the remainder of the particle stream at separate locations." (emphasis added)

As emphasized hereinabove, amended claim 73 now includes limitations in which it is specified that in a first step, the particle stream is distributed horizontally within a passageway and in another step, particles from the particle stream are projected outside of the passageway. Winkler describes an apparatus in which all the fluid jets entrain particles between one chamber (c) and another chamber (f). Winkler nowhere discloses or suggests a step of distributing the particles horizontally within one of the chambers (c) and (f). Accordingly, the Applicant respectfully submits that amended claim 73 is neither anticipated nor suggested by Winkler and withdrawal of the rejection of claim 73 is respectfully requested.

Since claims 74-77 depend directly or indirectly on claim 73, and since the Applicant believes that claims 73 is in allowable form, the Applicant respectfully requests withdrawal of the rejection of claims 74-77 for reasons similar to the reasons exposed hereinabove with respect to claim 73.

The Examiner has rejected claims 62-68, 70-76 under 35 USC 102 as being anticipated by US Patent 2,003,899, hereinafter Nesbit.

Amended claim 62 reads:

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"62. An apparatus for separating a particle stream into a first particle group and a second particle group, said apparatus being connectable to a positive pressure source, said apparatus comprising:

- a dilution treatment chamber defining a passageway, said passageway being substantially upstanding and defining a passageway top end and a substantially opposed passageway bottom end, said passageway top end defining a particle inlet and said passageway bottom end defining a first-particle-group outlet for releasing the first particle group, said passageway being configured and sized to receive the particle stream at said particle inlet such that the particle stream falls toward said first-particle-group outlet;
- a transfer casing located substantially adjacent to said dilution treatment chamber, said transfer casing defining a transfer chamber provided for receiving the second particle group;
- at least one transfer aperture substantially laterally positioned with respect to said passageway, said transfer aperture extending between said transfer chamber and said passageway and allowing fluid communication therebetween, **said at least one transfer aperture including an uppermost transfer aperture, said passageway and said transfer chamber being separated from each other by a wall above said uppermost transfer aperture** for preventing said particles from said particle stream falling in said passageway from entering said transfer chamber above said uppermost transfer aperture;
- a distributor located in said passageway between said particle inlet and said transfer aperture, said distributor being provided for substantially breaking down the particle stream and distributing the particle stream substantially horizontally within said passageway, said distributor including a fluid-injection nozzle defining a distributor aperture laterally positioned in said passageway, **said distributor aperture being located above said uppermost transfer aperture**, said fluid-injection nozzle being connectable to the positive pressure source for injecting a jet of the fluid in said

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passageway through the distributor aperture for distributing the particle stream over a surface area of said passageway; and

- at least one fluid flow aperture provided in said dilution treatment chamber for creating a substantially horizontal fluid flow in said passageway, said at least one fluid flow aperture and said transfer aperture being located below said distributor substantially horizontally aligned relatively to each other and located substantially opposed to each other relatively to said passageway, said fluid flow aperture being connectable to the positive pressure source to create the fluid flow;
- whereby the fluid flow pushes the second particle group out of said passageway through said transfer aperture and into said transfer chamber with the first particle group remaining in said passageway for exiting through said first-particle-group outlet." (emphasis added)

As emphasized hereinabove, amended claim 62 now includes a limitation in which it is specified that an aperture of a nozzle through which a fluid can be injected is located above all the transfer apertures allowing fluid communication between the transfer chamber and the passageway. Nesbit describes an apparatus in which all the nozzles are facing an aperture allowing fluid communication between two chambers. Nesbit nowhere discloses a distributor aperture as claimed. In fact, Nesbit teaches away from the claimed invention as **all the apertures through which a fluid can be injected are used to transfer particles between the two chambers.** Accordingly, the Applicant respectfully submits that amended claim 62 is neither anticipated nor suggested by Nesbit and withdrawal of the rejection of claim 62 is respectfully requested.

Since claims 63-68 and 70-71 depend directly or indirectly on claim 62, and since the Applicant believes that claims 62 is in allowable form, the Applicant respectfully requests withdrawal of the rejection of claims 63-68 and 70-71 for reasons similar to the reasons exposed hereinabove with respect to claim 62.

Furthermore, regarding claim the rejection of claim 67, the Applicant respectfully disagrees with the Examiner's rejection for the following reason. Claim 67 reads:

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"67. (Previously presented) The apparatus according to claim 66, wherein said fluid flow aperture is defined by at least one nozzle provided for projecting a fluid jet, **said nozzle including an adjustable gate selectively movable across said fluid flow aperture** for controlling a rate and pressure of the fluid jet projected from said fluid flow aperture."

Nesbit describes a system in which dampers 58 and 59 (Col 4, lines 35+) are located inside the conduit leading to the nozzles. Therefore, the dampers 58 and 59 are located spaced apart from the aperture through which the fluid flows out of the nozzles. Furthermore, the Applicant respectfully submits that to the person skilled in the art, dampers are baffles that are pivotably mounted in passageways so as to pivot about an axis that is non-parallel to the longitudinal axis of the passageway. In direct opposition to the teachings of Nesbit, the claimed invention is directed to nozzles **in which an adjustable gate is selectively movable across the fluid flow aperture, which is the aperture in the nozzle through which the fluid is ejected.** This movement is a **translation movement, as opposed to the rotational movements of dampers, and occurs at the aperture through which the fluid is ejected, and not upstream of the nozzle.** Accordingly, the Applicant respectfully submits that for this additional reason, claim 67 is neither anticipated nor suggested by Nesbit and withdrawal of the rejection of claim 67 is respectfully requested.

Amended claim 73 reads:

"73. (Currently amended) A method for separating a particle stream into particle groups, comprising:

- vertically diluting the particle stream by directing the particle stream into a falling condition within a passageway and accelerating the particle stream under the action of gravity;
- horizontally diluting the particle stream by distributing the particle stream by subjecting the particle stream to high pressure fluid flow creating lateral forces so as to distribute the

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particle stream over a surface area of said passageway with said particle stream remaining confined inside said passageway;

- projecting a particle group away from a remainder of the particle stream and outside of said passageway by creating a fluid flow of predetermined magnitude across the particle stream in said falling condition; and
- collecting the particle group and the remainder of the particle stream at separate locations." (emphasis added)

As emphasized hereinabove, amended claim 73 now includes limitations in which it is specified that in a first step, the particle stream is distributed horizontally within a passageway and in another step, particles from the particle stream are projected outside of the passageway. Nesbit describes an apparatus in which all the fluid flows entrain particles between two chambers, for example the space located left of 12 in Fig. 1 and the space located right of 12 in the same Fig. Nesbit nowhere discloses or suggests a step of distributing the particles horizontally within one of the chambers. Accordingly, the Applicant respectfully submits that amended claim 73 is neither anticipated nor suggested by Nesbit and withdrawal of the rejection of claim 73 is respectfully requested.

Since claims 74-76 depend directly or indirectly on claim 73, and since the Applicant believes that claims 73 is in allowable form, the Applicant respectfully requests withdrawal of the rejection of claims 74-76 for reasons similar to the reasons exposed hereinabove with respect to claim 73.

The Examiner has rejected claims 62, 66, 69 and 71 under 35 USC 102 as being anticipated by US Patent 818,944, hereinafter Eaches.

Amended claim 62 reads:

"62. An apparatus for separating a particle stream into a first particle group and a second particle group, said apparatus being connectable to a positive pressure source, said apparatus comprising:

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- a dilution treatment chamber defining a passageway, said passageway being substantially upstanding and defining a passageway top end and a substantially opposed passageway bottom end, said passageway top end defining a particle inlet and said passageway bottom end defining a first-particle-group outlet for releasing the first particle group, said passageway being configured and sized to receive the particle stream at said particle inlet such that the particle stream falls toward said first-particle-group outlet;
- a transfer casing located substantially adjacent to said dilution treatment chamber, said transfer casing defining a transfer chamber provided for receiving the second particle group;
- at least one transfer aperture substantially laterally positioned with respect to said passageway, said transfer aperture extending between said transfer chamber and said passageway and allowing fluid communication therebetween, said at least one transfer aperture including an uppermost transfer aperture, said passageway and said transfer chamber being separated from each other by a wall above said uppermost transfer aperture for preventing said particles from said particle stream falling in said passageway from entering said transfer chamber above said uppermost transfer aperture;
- a distributor located in said passageway between said particle inlet and said transfer aperture, said distributor being provided for substantially breaking down the particle stream and distributing the particle stream substantially horizontally within said passageway, said distributor including a fluid-injection nozzle defining a distributor aperture laterally positioned in said passageway, said distributor aperture being located above said uppermost transfer aperture, said fluid-injection nozzle being connectable to the positive pressure source for injecting a jet of the fluid in said passageway through the distributor aperture for distributing the particle stream over a surface area of said passageway; and
- at least one fluid flow aperture provided in said dilution treatment chamber for creating a substantially horizontal fluid flow in said passageway, said at least one fluid flow aperture and said transfer aperture being located below said distributor**

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**substantially horizontally aligned relatively to each other and located substantially opposed to each other relatively to said passageway, said fluid flow aperture being connectable to the positive pressure source to create the fluid flow;**

- whereby the fluid flow pushes the second particle group out of said passageway through said transfer aperture and into said transfer chamber with the first particle group remaining in said passageway for exiting through said first-particle-group outlet." (emphasis added)

As emphasized hereinabove, amended claim 62 includes a limitation directed to the presence of fluid flow apertures through which a positive pressure source is connectable for creating a fluid flow. However, Eaches describes fans D that are used to produce fluid flows. Item B referred to by the Examiner is a power wheel that is used to activate the fans D (Lines 33 – 70). Nowhere does Eaches describe a fluid flow aperture as claimed. Even if the opening through which the shaft of the power wheel B were connected to a positive pressure source, the presence of the shaft of the power wheel B in the aperture would prevent the creation of a fluid flow through the aperture through which the shaft extends. Furthermore, this aperture is not horizontally aligned with an aperture leading out of the chamber through which the particles fall. Also, Eaches fails to disclose the limitations discussed hereinabove with respect to the rejections of claim 62 in view of Nesbit and Winkler. Accordingly, the Applicant respectfully submits that amended claim 62 is neither anticipated nor suggested by Eaches and withdrawal of the rejection of claim 62 is respectfully requested.

Since claims 66, 69 and 71 depend directly or indirectly on claim 62, and since the Applicant believes that claims 62 is in allowable form, the Applicant respectfully requests withdrawal of the rejection of claims 66, 69 and 71 for reasons similar to the reasons exposed hereinabove with respect to claim 62.

Yet furthermore, amended claim 68 now read as follows:

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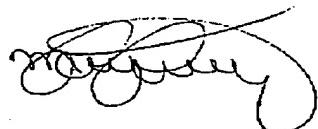
"68. The apparatus according to claim 62, wherein said fluid-injection nozzle tapers in a direction leading towards said distributor aperture\_substantially adjacent said distributor aperture."

None of the references cited by the Examiner describe such a configuration of the nozzle. To the contrary, the nozzles described in Eaches, Winkler and Nesbit all have a configuration of substantially constant or divergent cross-section when approaching their outlets. As mentioned in the application as filed, "the above-described configuration of the nozzle 14 enables a high-pressure, low-volume output of gaseous fluid into the dilution treatment chamber 12 to produce a high impact on the particle stream. Accordingly, the output of gaseous fluid will decelerate at a high rate, so as to entrain in some instances described hereinafter a given particle group out of the dilution treatment chamber 12, and to avoid enhancing turbulence in the transfer chamber 30. Such turbulence would slow down the settling process in the transfer chamber 30, for instance, if the apparatus 10 were used for classifying particle groups." This configuration is therefore greatly advantageous over the configuration described in any of the references cited by the Examiner and not a mere trivial design choice. Accordingly, the Applicant respectfully submits that for this additional reason, claim 68 is neither anticipated nor suggested by Nesbit and withdrawal of the rejection of claim 68 is respectfully requested.

It is now believed that the application is now in order for Allowance and such an allowance would be appreciated.

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RESPECTFULLY SUBMITTED



MICHEL COUTURE, Applicant

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